UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 11, 2003

MEMORANDUM TO: Janet R. Schlueter, Chief
High-Level Waste Branch
Division of Waste Management
Office of Nuclear Material Safety and Safeguards

FROM: Robert M. Latta, Sr. On-Site Licensing Representative
Repository Site Section
Division of Waste Management
Office of Nuclear Material Safety and Safeguards

Jack D. Parrott, Sr. On-Site Licensing Representative
Repository Site Section
Division of Waste Management
Office of Nuclear Material Safety and Safeguards

SUBJECT U.S. NUCLEAR REGULATORY COMMISSION ON-SITE LICENSING REPRESENTATIVES' REPORT ON YUCCA MOUNTAIN PROJECT FOR MARCH 1, 2003, THROUGH APRIL 30, 2003

The purpose of this memorandum is to transmit the U.S. Nuclear Regulatory Commission (NRC) On-Site Representatives' (ORs) report for the period of March 1, 2003, through April 30, 2003.

This report highlights a number of Yucca Mountain Project activities of potential interest to NRC staff. The ORs continue to respond to requests from NRC Headquarters staff to provide various documentation and feedback related to Key Technical Issues (KTIs) and their resolution. During this reporting period, the ORs continued to observe activities associated with Yucca Mountain site activities, KTIs, and audits. The ORs also attended various meetings and accompanied NRC staff on visits to Yucca Mountain.

If you have any questions on this report or its attachments, please call Robert Latta on (702) 794-5048, or Jack Parrott on (702) 794-5047.

Attachment(s): 1. U.S. Nuclear Regulatory Commission On-Site Licensing Representatives' Report, Number OR-03-02 for the Reporting Period of March 1, 2003 Through April 30, 2003
2. Figure 1: ESF/ECRB Plan View Alcove, Niche and Borehole Testing Locations
3. Table 1: U.S. NRC On-Site Licensing Representatives' Tracking Report for Open Items
4. Table 2: Current Test Activities by Scientific Investigation Test Plan

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U.S. NUCLEAR REGULATORY COMMISSION

ON-SITE LICENSING REPRESENTATIVES' REPORT

NUMBER OR-03-02

FOR THE REPORTING PERIOD OF MARCH 1, 2003 THROUGH APRIL 30, 2003

/RA/

Robert M. Latta
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Larry Campbell
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Repository Site Section
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Division of Waste Management

Enclosure

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ACRO	TITLE
AECL	Atomic Energy of Canada, Limited
AMR	Analysis Modeling Report
AP	Administrative Procedure
ATC	Alluvial Tracer Complex
BSC	Bechtel SAIC Company, LLC
CAR	Corrective Action Report
CAQ	Conditions Adverse to Quality
the Center	Center for Nuclear Waste Regulatory Analyses
CSO	Chief Science Office
CT	Confirmation Team
DOE	U.S. Department Of Energy
DR	Deficiency Report
ECRB	Enhanced Characterization of the Repository Block
ESF	Exploratory Studies Facility
EWDP	Early Warning Drilling Program
FY	Fiscal Year
GUT	General Underground Training
HLW	High-Level Waste
KTI	Key Technical Issue
LA	License Application
MII	Management Improvement Initiative
NMSS	Nuclear Materials Safety and Safeguards
No.	Number
NRC	U.S. Nuclear Regulatory Commission
NUREG	Nuclear Regulatory Guide

ACRONYMS AND ABBREVIATIONS - continued -

ACRO	TITLE
OCRWM	Office of Civilian Radioactive Waste Management
OR	On-Site Representative
ORD	Office of Repository Development
OQA	Office of Quality Assurance
QA	Quality Assurance
QARD	Quality Assurance Requirements Description
RCD	Root Cause Determinations
RPC	Records Processing Center
R2A2	Roles, Responsibilities, Authority and Accountability
SCWE	Safety Conscious Work Environment
STIR(s)	Suspect Trend Investigation Reports
SWO	Stop Work Order
TSPA-LA	Total System Performance Assessment - License Application
TSPA-SR	Total System Performance Assessment - Site Recommendation
TWP	Technical Work Plan
UCCSN	University and Community College System of Nevada
YMP	Yucca Mountain Project

EXECUTIVE SUMMARY

CORRECTIVE ACTION REPORT BSC(B)-03-C-107 (DATA MANAGEMENT)

From March 17-27, 2003, the On-Site Representatives (ORs) and representatives from the High-Level Waste Branch (HLWB) observed portions of U.S. Department of Energy's (DOE's) Office of Quality Assurance (OQA) Audit OQAP-BSC-03-05 of Bechtel SAIC Company, LLC (BSC) which evaluated the integrity of data associated with the Yucca Mountain Project License Application (LA). The purpose of this audit was to perform a limited scope evaluation of data sets associated with completed technical products supporting LA. During the conduct of this Audit the ORs and the U.S. Nuclear Regulatory Commission (NRC) observers became aware of a potential significant condition adverse to quality concerning ineffective corrective actions for prior deficiencies related to data used in technical products. On April 17, 2003, BSC issued Corrective Action Report (CAR) BSC(B)-03-(C)-107. This CAR, which was self-identified by the Performance Assessment and Technical Input Group, documented numerous examples of Deficiency Reports (DRs) and CARs over the past four years which cumulatively represented inadequate implementation of procedural controls and ineffective corrective actions to prevent recurrence.

At the conclusion of this reporting period the technical impact of CAR BSC(B)-03-(C)-107 had not been determined. However, it is significant to note that the documented findings were the result of the line organization's self-identification process which represents a positive indication of the project's goal of institutionalizing continuous improvement. The ORs will continue to monitor the resolution of CAR BSC(B)-03-(C)-107, and the results will be documented in a future report.

REVIEW OF ROOT CAUSE DETERMINATION FOR CAR BSC(O)-03-C-097

On March 6, 2003, OQA initiated CAR BSC (O)-03-C-097, which identified that contrary to the requirements of the Quality Assurance Requirements and Description (QARD) and administrative procedure (AP)-5.1Q, "Plan and Procedure Preparation, Review, and Approval," BSC failed to effectively implement the procedure development processes, during the preparation, review and approval of BSC-AP-ATS-0001, "Procedure Development and Use."

During this reporting period the ORs reviewed the preliminary results of BSC's Root Cause Determination (RCD) for CAR BSC (O)-03-C-097. As described in the RCD, several common root causes were identified including the determination that: 1) accountability for following procedures was ineffective; 2) inadequate supervision; 3) lack of identification of behavior-based corrective actions in recent related Deficiency Reports; and 4) lack of signature accountability and integrity. The RCD also identified that a contributing factor to the deficiencies identified in this CAR involved personnel choosing not to comply with existing procedures. The ORs will continue to monitor the actions related to resolution of CAR BSC (O)-03-C-097 as well as the RCD and the results will be documented in a future report.

MANAGEMENT IMPROVEMENT INITIATIVES (MII) CONFIRMATION REVIEW PROCESS

The ORs continued to evaluate the results of the Management Improvement Initiatives (MII) Confirmation Team (CT) established by the Office of Civilian Radioactive Waste Management (OCRWM) to provide a mechanism to determine overall program implementation and MII completion status. In order to validate the adequacy of this confirmation process, the ORs reviewed 12 completed confirmation packages. Based on the results of these reviews, the ORs determined that the confirmation packages continue to be well documented, that the level of

detail included in the confirmation packages was excellent, and the objective evidence demonstrating the completed actions were clearly identified. No items of concern were identified with the completed confirmation packages and it was generally determined that these documents established an effective baseline for demonstrating that the MII items have been completed.

During the review of these records, the ORs identified that the action statement execution task descriptions and completion schedules for many of the reviewed confirmation packages had been modified without appropriate justification. Specifically, in 9 of the 12 packages reviewed, the execution task descriptions had been revised by the responsible manager to reduce or change the scope of work, and in some instances schedules and the due dates had been revised without justification. It was also determined that at least one of the MII action statements had been revised to eliminate the development of additional procedures. The ORs determined that the change in scope of the action statement in the MII, should have resulted in a revision to the MII, in accordance with the requirements of AP-5.1Q. Therefore, pending the resolution of this apparent deviation from a commitment to administer the MII in accordance with the requirements of AP-5.1Q, this issue is identified as **OR Open Item 03-02**.

MII COMPLETION STATUS

Based on the ORs' reviews of project schedules less than 45% of the milestones established in the MII were reported completed on time. It was also determined by the ORs that while a draft set of performance indicators associated with the MII were distributed during the April 30, 2003 NRC/DOE Management Meeting, the projects final set of performance indicators are still under development. Corrective actions related to CAR BSC-01-C-002, which is nearly 2 years old, remain behind schedule and the management imposed stand-down on software development, which has been in effect for almost 2 years, remains in place with no established date for concluding this administrative process. The ORs also noted that the effective self-identification of deficiencies is an anticipated outcome of the MII. However, current indications are that line identified items only represent approximately 28% of the total population which is below the targeted value of 50%.

As of April 30, 2003, the project reported that 23 of the 29 MII action statements had been confirmed completed. However, six of the scheduled actions, currently with the responsible managers for action, have not been reported as complete as of the end of this reporting period. Although progress has been made in addressing corrective actions in the MII, the ORs identified a concern regarding four of the remaining MII actions related to programs that are behind schedule. Specifically, the MII actions to implement a single corrective action program and the efforts to establish a set of new or revised DOE/BSC program procedures, are significantly behind schedule. Accordingly, the ORs will continue to monitor the implementation of the MII corrective actions and the development of effective performance indicators. These issues will also be potential areas for discussion at the next NRC/DOE Quarterly QA and Management meetings, scheduled for late July 15-16, 2003.

INDEPENDENT REVIEW OF QUALITY ASSURANCE REQUIREMENTS AND DESCRIPTION

In order to confirm the adequate implementation of corrective actions associated with Section 5.2, of the MII, concerning QA Programs and Processes, the ORs examined the results of DOE's independent review of the QARD. This independent review confirmed the appropriate alignment of the QARD with the applicable regulatory requirements and industry standards. Further, the review concluded that the QARD was adequate for the project and only minor

changes were recommended. Also, the ORs determined that the results of the independent review of the QARD along with the ORs' review of the MII source documents did not support the assertion in the MII that the QARD contained information that is confusing and difficult to implement. It is noted that the results of this independent assessment were incorporated in Revision 13 to the QARD, effective April 22, 2003. Therefore, the approach described in Section 5.2 of the MII indicating a potential need for major revision of the QARD to align the QA program with necessary and sufficient requirements does not appear to be supported by the independent assessment or the recent revision to the QARD.

SUSPECT TREND INVESTIGATION REPORTS

The ORs reviewed two Suspect Trend Investigation Reports (STIRs) that were recently initiated by OQA. These investigations resulted from DOE's trend program identification of a continued increase in common events. The first issue, documented on STIR No. BSC-03-002, involved the untimely submittal of QA records to the Records Processing Center (RPC). The second STIR No. BSC-03-001, was initiated on February 5, 2003, to evaluate inadequate content in implementing documents.

Based on the ORs' reviews of the subject STIRs, it was concluded that although the results of OQA's investigations did not indicate an adverse quality trend for the specific events identified in the respective STIRs, the analysis did correctly identify a common causal factor related to inadequate procedure adherence. The identification of these examples of procedure noncompliance, represent an improvement in the trending program and they support the Office of Repository Development (ORD) continuing efforts to enhance procedure compliance across the project.

MODEL VALIDATION

The ORs evaluated DOE's progress in implementing corrective actions associated with CAR BSC-01-C-001, concerning model validation. Specifically, the ORs reviewed technical work plans (TWPs) covering approximately 43 models, to verify the appropriateness of the model validation criteria approved by the Chief Science Office (CSO) as part of the TWP review process. Based on the results of the ORs' review of the TWPs, it could not be objectively determined that established evaluation criteria will result in the development of models with adequate confidence for LA. This issue was discussed with BSC. Therefore, pending the resolution of this issue it is identified as OR **Open Item 03-03.**

GENERAL SITE ISSUES

In January 2003, a standing order was issued by the Site Operations Project Manager giving notice of a safety stand-down for all electrical work at the Yucca Mountain site. This stand-down was based on safety and quality concerns. During this reporting period, the stand-down was gradually being lifted with training and qualification of new electricians.

During this reporting period, tunnel access was limited by a standing order. This order was based on an employee concern that the underground fire hazard analysis for the main tunnel of the ESF did not resolve earlier safety recommendations made for tunnel access. As of this reporting period, compensatory measures were being determined to address the outstanding safety issues.

EXPLORATORY STUDIES FACILITY TESTING

The drift-scale thermal test continued its cool-down phase. Two new chemistry boreholes have been drilled in the access drift adjacent to the drift-scale test. DOE has also begun Phase I of a ground support test in the south ramp of the Exploratory Studies Facility (ESF).

ENHANCED CHARACTERIZATION OF REPOSITORY BLOCK TESTING

Entry beyond the sealed bulkhead at Station 22+01 is scheduled for June 2003.

SURFACE-BASED FIELD TESTING

Continued drilling on the Nye County Early Warning Drilling Program (EWDP) Phase IV wells has not yet commenced. Geotechnical sampling and tests at the Pena Blanca, Mexico, site (natural analog program) and deep water well drilling in Inyo County, California have started.

LABORATORY STUDIES

During this reporting period post-migration radiometric analysis on the tuff blocks, and microbiological investigations, into the cause of chemically reducing conditions in the saturated block, continued.

UPCOMING NEW TESTS AND STUDIES

Planned for Fiscal Year (FY) 2003 - Construction of Alcove 10 in the ECRB, and a thermal management dispersion test at the Atlas facility.

DOE MONTHLY OPERATING MEETINGS

During this reporting period, the ORs began attending DOE's newly established Monthly Operating Report (MOR) meetings. The ORs find these meetings very beneficial to the NRC's interest in determining project status during the pre-license application consultation period.

DOE/BSC ROLLING QUALITY FOCUS MEETING

In response to issues identified in Stop Work Order BSC (O)-03-C-097 and CAR BSC (O)-03-C-097, concerning a programmatic break-down in the procedure transition process, DOE and BSC senior management developed project "Rolling Quality Focus" meetings. The ORs were invited to, and did attend the two meetings held during the reporting period. The ORs found attendance at these meetings very helpful in trying to evaluate DOE's process for addressing procedural compliance issues on the project.

REPORT DETAILS

INTRODUCTION

The principal purpose of the On-Site Representatives' (ORs) report is to inform U.S. Nuclear Regulatory Commission (NRC) managers, staff, and contractors of information on the U.S. Department of Energy (DOE) programs in repository design, performance assessment, performance confirmation, and environmental studies, that may be useful in fulfilling NRC's role during prelicensing consultation. The primary focus of this and future OR reports will be on DOE's programs for subsurface- and surface-based testing, performance assessment, data management systems, and environmental studies. Relevant information includes new technical data, DOE's plans and schedules, and the status of activities to pursue the License Application (LA). The ORs also take part in activities associated with resolving NRC Key Technical Issues (KTIs). This report covers the period of March 1, 2003, through April 30, 2003.

OBJECTIVES

The ORs mission is to serve principally as a point of prompt information exchange and to identify preliminary concerns with site investigations and potential licensing issues. The ORs carry out this role by gathering and evaluating information, identifying concerns, and raising more significant issues to NRC management's attention. Communication with DOE is accomplished by exchanging information on data, plans, schedules, documents, activities and pending actions, and resolution of issues. The ORs interact with DOE scientists, engineers, and managers, with input from NRC Headquarters management, regarding the implementation of NRC policy, programs, and regulations. The ORs also focus on such issues as quality assurance (QA), design controls, data management systems, performance assessment, and KTI resolution. A primary OR role is to identify areas in site studies, activities, or procedures that may be of interest or concern to the NRC staff.

1 QA AND ENGINEERING

1.1 Corrective Action Report BSC(B)-03-C-107 (Data Management and Utilization)

From March 17-27, 2003, the ORs and representatives from the High-Level Waste Branch (HLWB) observed portions of DOE's Office of Quality Assurance (OQA) Audit OQAP-BSC-03-05 of Bechtel SAIC Company, LLC (BSC), which evaluated the integrity of data associated with the Yucca Mountain Project License Application. During the audit OQA performed a limited scope evaluation of data sets associated with completed technical products supporting Licensing Application (LA). Because the majority of the technical products related to LA are not completed, this audit was limited to a review of a relatively small set of completed technical products considered important to LA. Accordingly, the team was not able to conclude that data supporting the LA was adequate; and could not obtain complete confidence of the overall fidelity of the data related to LA. Therefore, further reviews of the integrity of data associated with LA will be performed when a larger sample of technical products are completed.

As a result of the audit, three conditions adverse to quality were identified including Deficiency Report (DR), DR BSC(O)-03-D-129, related to inadequate documentation for evaluation criteria in technical work plans and DR BSC(O)-03-D-130, concerning the failure to adequately document data qualification results. Additionally, DR BSC(O)-03-D-135, documented the lack of traceability and transparency of data to the Technical Data Management System.

During the conduct of this audit, the ORs and the NRC observers became aware of a potential significant condition adverse to quality concerning ineffective corrective actions for prior deficiencies related to data used in technical products. Subsequent to the March 27, 2003, post audit conference, the ORs continued to follow this issue and on April 17, 2003, BSC issued Corrective Action Report (CAR) BSC(B)-03-(C)-107. This CAR, which was self-identified by the Performance Assessment and Technical Input Group, documented numerous examples of DRs and CARs over the past four years, which cumulatively represented inadequate implementation of procedural controls and ineffective corrective actions to prevent recurrence. Specifically, the BSC organization responsible for the qualification and confirmation of data to support LA performed an detailed review of approximately 46 DRs and CARs related to data. Based on BSC's detailed review of these deficiencies, which included analysis and grouping of conditions for both open and closed DRs and CARs, a pattern was identified which indicated that repeated attempts to resolve these adverse conditions have been unsuccessful, and that collectively they represented a potential for significant project impact. Although the technical impact of CAR BSC(B)-03-(C)-107 has not been determined, it is significant to note that the documented findings were the result of the line organizations self-identification process which represents a positive indication of the project's goal of institutionalizing continuous improvement. The ORs will continue to monitor the resolution of CAR BSC(B)-03-(C)-107, and the results will be documented in a future report.

1.2 Review of Root Cause Determination for CAR BSC(O)-03-C-097

As previously documented in OR Report 03-01, dated April 14, 2003, OQA initiated a Stop Work Order (SWO) No. BSC (O)-03-C-097, on March 4, 2003, related to the BSC procedure development process. Subsequent to the issuance of the SWO, OQA initiated CAR No. BSC (O)-03-C-097, on March 6,2003, which documented that contrary to the requirements of the Quality Assurance Requirements Description (QARD) and Administrative Procedure (AP)-5.1Q, "Plan and Procedure Preparation, Review, and Approval," BSC failed to effectively implement the procedure development processes, during the preparation, review and approval of BSC-AP-ATS-0001, and related processing of procedures. The CAR also concluded that procedure BSC-AP-ATS-0001, was not acceptable for use based on the significant condition adverse to quality identified by OQA's surveillance team.

During this reporting period the ORs reviewed the preliminary results of BSC's Root Cause Determination (RCD) for CAR BSC (O) -03-C-097. As described in the RCD, several common root causes were identified including the following:

- Accountability for following procedures was ineffective
- Inadequate supervision
- Lack of identification of behavior-based corrective actions in recent related Deficiency Reports (DRs)
- Lack of signature accountability and integrity

The RCD also identified that a contributing factor to the deficiencies identified in CAR BSC (O) -03-C-097 involved personnel choosing not to comply with existing procedures. Recommendations from the RCD focused on the need to:

- Enforce procedure compliance
- Revising the review and comment process

- Establish and enforce the policy on importance and integrity of signatures
- Assure corrective action program addresses behavior based issues as well as process errors
- Hold management and supervision accountable

As a result of the ORs' initial review of the RCD, it was noted that the document appeared to identify the primary root causes. However, the ORs identified several issues regarding the completeness of the document that were provided to project management for clarification. These issues concerned the RCD content which did not explicitly consider a barrier analysis, nor did it appear to address the aggregate of the problems associated with CAR BSC (O) -03-C-097. The ORs will continue to monitor the actions related to resolution of CAR BSC (O)-03-C-097 as well as the RCD and the results will be documented in a future report.

1.3 Management Improvement Initiatives Confirmation Review Process

On July 19, 2002, the Director of OCWRM issued "Management Improvements Initiative" (MII) (PLN-CRW-AD-000009, Revision 0). The MII was developed to address deficiencies in the implementation of the Office of Civilian Radioactive Waste Management (OCRWM) QA requirements to: 1) prevent recurrence of previously identified program implementation inadequacies; and 2) establish a basis for improved performance. The objective of the MII is to ensure that the Office of Repository Development (ODR) technical work products consistently meet quality objectives and are fully defensible. Additionally, DOE established a commitment, in their letter to Martin Virgilio, from Margaret Chu, dated April 5, 2002, that the OCRWM Management Improvement Initiative (OMII) Revision 1, (currently the MII) would be developed and administered as a plan and implemented under the projects QA program procedure AP-5.1Q, "Plan and Procedure Preparation, Review, and Approval."

The MII identified the following five areas in which improvements were needed:

1) Program Roles, Responsibilities, Authority, and Accountability (R2A2)
2) QA Programs and Processes
3) Program Procedures
4) Corrective Action Program, and
5) Safety-Conscious Work Environment (SCWE).

Within the MII, the DOE identified specific actions for implementation to achieve improvement in each of the areas listed above, as well as, indicators to measure progress and effectiveness. There are 29 action statements associated with the 5 MII key areas. Additionally, there are 12 action statements related to CARs BSC-01-C-001 and 25 action statements associated with CAR BSC-01-C-002 concerning deficiencies in models and software, respectively.

During this reporting period, the ORs continued to evaluate the results of the MII Confirmation Team (CT) established by OCRWM management direction to provide a mechanism to determine overall program implementation and MII completion status. The MII identified that a review and closure process would be instituted to ensure the action plans were implemented and effective in improving performance. As part of the MII closure process, reviews by DOE's OQA and the CT were performed to assess the completion of the MII action statements. In order to confirm the adequacy of this process, the ORs reviewed 12 completed confirmation packages conducted by the CT for the action statements listed in Section 1, (R2A2), Section 2, (QA Programs), Section

3, (Procedures), and Section 5, (SCWE) of the MII.

Based on the results of these reviews, the ORs determined that the confirmation activities were well documented and that the respective action statement responsible managers appropriately concurred on the completed activities. The level of detail included in the confirmation activities was excellent, and the objective evidence demonstrated the completed actions were clearly identified. No items of concern were identified with the completed confirmation packages and it was generally determined that these documents established an effective baseline for demonstrating that the MII items have been completed.

However, during the review of these records the ORs identified that the action statement execution task descriptions and completion schedules for many of the reviewed confirmation packages had been modified without appropriate justification. Specifically, for 9 of the 12 packages reviewed, the execution task descriptions had been revised, by the responsible manager, to reduce or change the scope of work and in some instances, schedules and the due dates had been revised without justification. It was also determined that MII action statement No. 5.5 (SCWE), which stated that "DOE will establish a DOE policy and procedures regarding expectations to escalate issues in an expedient manner," had been revised to eliminate the development of additional procedures. Although a rational for revising the action statement was provided, (i.e., enforcement of management expectations would be more appropriate than the development of additional procedures) the ORs determined that the change in scope of the action statement in the MII, should have resulted in a revision to the project plan, in accordance with the requirements of AP-5.1Q. Therefore, pending the resolution of this apparent deviation from a commitment to administer the MII in accordance with the requirements of AP-5.1Q, is identified as **OR Open Item 03-02**.

1.4 MII Completion Status

There are 29 discrete action statements associated with the 5 MII Action Plans. Additionally, there are approximately 37 Action Statements related to CARs BSC-01-C-001 (Models) and BSC-01-C-002 (Software). As of April 30, 2003, the project reported that 23 of the MII action statements (approximately 79%) had been confirmed completed. However, six of the scheduled actions, currently with the responsible managers for action, have not been reported as complete as of the end of April 2003. These remaining MII actions, include one related to R2A2, five involving Procedures, two concerning the CAP program, and one related to SCWE.

As of the end of April 2003, less than 45% of the milestones established in the MII were reported completed on time. Although a draft set of performance indicators associated with the MII were distributed during the April 30, 2003 NRC/DOE Management Meeting, the projects final set performance indicators are still under development. The ORs also noted that the effective self-identification of deficiencies is an anticipated outcome of the MII. However, current indications are that line identified items are at approximately 28%, which is well below the targeted value of 50%.

CAR BSC-01-C-001, which has been open for approximately 2 years, has one action with a late closure. At the end of this reporting period, 6 of the 12 actions related to this CAR have been completed and verified by OQA. Three action items are in review with the responsible managers and three are currently in the verification and confirmation process. Corrective actions related to CAR BSC-01-C-002, which is almost 2 years old,

remain behind schedule. Specifically, 15 of the 25 actions associated with the completion of CAR BSC-01-C-002, are currently overdue. As of the end of April 2003, nine actions have been completed and verified as satisfactory, nine actions have been reported as complete and are ready for verification/confirmation. Six actions are in progress with the responsible manager, and one action concerning the performance of a self-assessment has not started. The nearly 2 year old management imposed stand-down on software development, related to CAR BSC-01-C-002, remains in place with no established date for concluding this administratively controlled process.

Although progress has been made in addressing corrective actions in the MII, the ORs identified a concern regarding four of the remaining MII actions related to programs that are behind schedule. Specifically, the MII actions to implement a single corrective action program by December of 2002, is overdue and the establishment of a set of new or revised DOE/BSC program procedures, targeted for completion by April of 2003, is behind schedule. Accordingly, the ORs will continue to monitor the implementation of the MII corrective actions and the development of effective performance indicators. These issues will also be potential areas for discussion at the next NRC/DOE Quarterly QA Management meetings, scheduled for July 15-16, 2003.

1.5 Independent Review of QARD

Section 5.2 of the MII, concerning QA Programs and Processes states, in part, “The OCRWM QA program implements applicable regulatory requirements and the associated QA processes....that ensure the quality of technical products to support [a potential] license application.” The identified condition for this section of the MII also indicates that the QARD (Revision 11) contains a combination of requirements, commitments, and guidance that is confusing and difficult to implement. In order to address this condition, the MII identified an action statement to perform both internal and external reviews and revise the QARD, as necessary, to ensure that applicable requirements are identified, documented, and are traceable to regulatory drivers. The MII further states that the QA program is being aligned with a logical “flow-down” of necessary and sufficient requirements through a review and revision of the QARD. This process was intended to ensure that applicable requirements are identified and documented, and that requirements in the QARD are generally traceable back to regulatory basis.

In order to confirm the adequate implementation of corrective actions associated with this issue, the ORs examined the results of DOE’s independent review of the QARD that was recently incorporated into the QARD, Revision 13, effective April 22, 2003. Additionally, the ORs reviewed the source documents associated with the development of the MII and records related to the projects implementation of the QA program. This process involved evaluation of the external review methodology including the assessment of the QARD commitments and requirements matrix, criterion spread sheets, reference documents, and the proposed QARD redline text. As a result of this review, the ORs determined that potential changes were categorized into general groups consisting of (1) editorial changes with little or no impact; (2) incorrect integration/incorporation of information, determined by OQA to be non-significant; and (3) a small set of organizational and reference corrections that were either incorporated into QARD Revision 13 or are planned to be incorporated into the next revision of the QARD. The specific QA program changes/recommendations that resulted from the extensive external review of the QARD culminated in the following four items:

- Clarify the roles of DOE and BSC QA organizations and their respective activities for implementation of the QA process (Section 1.0 - Organization)
- Clarify the use of accepted data in Supplement III (Scientific Investigation)
- Clarify the roles of DOE and BSC QA organizations, and line management in the OCRWM corrective action program (Section 16.0 - Corrective Actions)
- Modify Appendix C (Monitored Geologic Repository) to eliminate the need to document nonconformance reports against other than systems, structures, and components.

Based on the results of this review, the ORs determined that the independent evaluation of the QARD substantiated the technical adequacy of the QARD and confirmed the appropriate alignment of this project document with the applicable regulatory requirements and industry standards. Further, the review concluded that the QARD was adequate for the project and only minor changes were recommended. It is noted that the results of this independent assessment were incorporated in Revision 13 to the QARD, effective April 22, 2003. Therefore, the approach described in Section 5.2 of the MII indicating a potential need for major revision of the QARD to align the QA program with necessary and sufficient requirements does not appear to be supported by the independent assessment or the recent revision to the QARD.

1.6 Suspect Trend Investigation Reports

The ORs reviewed two Suspect Trend Investigation Reports (STIRs) that were recently initiated. These investigations resulted from DOE's trend program identification of a continued increase in common events. The first STIR was identified as a result of OCRWM's QA Trend Evaluation for the second semester 2002. As documented in this report a potential issue was identified concerning the untimely submittal of QA records to the Records Processing Center (RPC). During this reporting period, which covered the last half of 2001 and all of 2002, conditions adverse to quality (CAQs) related to untimely submittals increased from 5 to 12. STIR No. BSC-03-002 was initiated to investigate this trend. This STIR evaluated approximately 140 CAQs to determine the technical composition of the noncompliance's. As a result of this investigation eighteen CAQs were found to be nonconformance's related to the untimely turn over of quality related records to the RPC.

Based on OQAs analysis, the failure to submit QA records to the RPC in accordance with procedural requirements represents an area of management interest among project organizations. Additionally, when the trend is analyzed on a normalized fiscal year basis, occurrences of this type more than doubled with each succeeding fiscal year. As a result of this analysis, OQA determined that the failure to follow procedures was the cause for nearly half of the occurrences and the actions to preclude recurrence of these CAQs have not been effective.

The second STIR No. BSC-03-001, was initiated on February 5, 2003, to evaluate inadequate content in implementing documents. DOE's previous trend report had considered that issues related to this subject may involve an emerging issue; however, subsequent evaluation concluded that an emerging issue did not exist. Evaluations addressed in the current trend report considered 11 CAQs related to apparent procedural content inadequacies that occurred from July 2001 through December 2003.

OQA's assessment of these CAQs included an evaluation of the apparent causes of the deficiencies to determine if the identified causes appeared to be accurate. Although the results of OQA's assessment did not reveal a significant weakness in the adequacy of content in the implementing procedures, they did indicate that procedures are becoming less effective in controlling project work activities. It was also determined by OQA that

the majority of the common cause factors related to these deficiencies was “failure to follow procedures.”

Based on the ORs’ reviews of the subject STIRs, it was concluded that although the results of OQA’s investigations did not indicate an adverse quality trend for the specific events identified in the respective STIRs, the analysis did correctly identify a common causal factor related to inadequate procedure adherence. The identification of these examples of procedure noncompliance, represent an improvement in the trending program and they support the ORD continuing efforts to improve procedure compliance across the project. Accordingly, the ORs will continue to follow this project improvement initiative and document the results in a future report.

1.7 Model Validation

As previously documented in OR Report 01-02, dated April 9, 2002, the ORs evaluated DOE’s progress in implementing corrective actions associated with CAR BSC-01-C-001 concerning model validation. These activities are being performed, in part, to develop confidence in DOE’s actions to resolve model validation deficiencies identified in the Total System Performance Assessment - Site Recommendation (TSPA-SR) prior to a potential LA.

During this reporting period, the ORs, with support from HLWB personnel, reviewed selected technical work plans (TWP) to verify the appropriateness of the model validation criteria approved by the Chief Science Office (CSO) as part of the TWP review process. The procedural controls for TWP review are contained in AP-SIII.10Q, “Models.” These procedural controls, in part, govern the confidence building activities for models used to support a potential license application. As described in OR Report 03-01 dated April 14, 2003, the ORs planned to evaluate approved TWPs to verify that the model validation criteria being utilized by the DOE are appropriately based on the intended use and the model and the model’s relative importance to safety.

The ORs reviewed TWPs covering approximately 43 models. As a result of this review, it was determined that the AP-SIII.10Q, model validation criteria, were appropriately identified in the TWPs evaluated. It was also established that multiple criteria were specified for many models, with approximately two-thirds of the models reviewed displaying adaptations of corroboration with data as a model validation criteria. As described in procedure AP-SIII.10Q, seven criteria can be used for post-development model validation activities. Additionally, AP-SIII.10Q, Section 5.2, of this procedure, concerning the “Development and Documentation of Models,” provides an outline in Attachment 3, which specifies that model validation documentation shall include:

- Documentation and discussion of activities performed in Subsection 5.4 of this procedure
- Criteria for ensuring the appropriate level of confidence has been obtained
- Results of the validation activities
- Rationale for determining that the validation criteria have been met
- Any future activities that need to be accomplished for model validation and a justification for extending model validation beyond the documented completion of the current model.

Based on the ORs reviews, it was generally concluded that the planning documents did not provide the necessary information to determine that the validation criteria have been met. Specifically, less than 20% of the documents reviewed provided adequate

objective criteria to evaluate whether the model validation criteria were satisfied during the modeling activity. Examples of inadequate evaluation criteria included several documents which stated that: "The criteria for model validation will be agreement of the [model to data] comparisons within the uncertainty range established with past and planned model uncertainty and sensitivity studies." This approach appears questionable because execution of the model establishes the model uncertainty; therefore, the simulated model uncertainty should not be used as a basis for validation of the model during the model to data comparison.

Based on the results of the ORs review of a representative sample of TWPs, it could not be objectively determined that established evaluation criteria will result in the development of models with adequate confidence for LA. This issue was discussed with BSC. Therefore, pending the resolution of this issue, it is identified as OR **Open Item 03-03.**

1.8 OR Report Open Items Review

During this reporting period, the project provided additional information concerning OR Open Item 02-03. This open item documented that the more objective criteria (e.g., comparison to data not explicitly used in the development of the model), are not effectively distinguished from the more subjective, and potentially problematic criteria.

As previously documented in OR Report OR 03-01, dated April 14, 2003, OR Open Item 02-03 remained open pending the review of CSO approved TWPs, and confirmation that corroboration with data is the preferred method for model validation. During this reporting period, the ORs evaluated the implementation processes related to the CSO expectation that corroboration with data is reflected in TWPs as the preferred method for model validation. In particular, the ORs examined a representative sample of approximately 40 TWPs. Based on the results of this review it was determined that the majority of these TWPs appropriately used corroboration with data as a selected model validation criteria. Additionally, the TWP for the Unsaturated Zone Models associated with performance assessment (TWP-NBS-HS-000003) explicitly identified that corroboration with data was the most desirable option among the model validation criteria. Therefore, **OR Open Item 02-03** is considered closed.

2. OUTREACH ACTIVITIES

2.1 Package Performance Study Test Protocols Public Workshops

On March 12, 2003, the ORs attended an NRC hosted public workshop on NUREG-1768, "Package Performance Study Test Protocols," in Las Vegas, Nevada. The report was discussed by a roundtable of about 20 stakeholder representatives, including county and city governments; the States of Nevada and Utah; Tribal representatives; nuclear and transport industry; the Department of Transportation, the Department of Energy; and public interest groups. Approximately 100 people attended the workshop in the morning, and about 75 in the afternoon. Issues discussed focused on: (a) testing all casks for certification; (b) identifying failure points/thresholds; (c) public confidence versus public safety; (d) terrorism; (e) the view that testing should be in Nevada; (f) first responder actions; and (g) testing to failure. The NRC staff emphasized that no decisions about how the tests will be conducted have been made and stated it will consider all comments. Also, an OR attended an evening public meeting held in Pahrump, Nevada, on March 13, 2003. Approximately 35 people attended the Package

Performance Study, and asked a broad range of questions on transportation and testing issues.

3 FIELD AND LABORATORY TESTING

3.1 General Issues

Electrical Work Safety Stand-down

On January 9, 2003, a standing order was issued by the Site Operations Project Manager giving notice of a safety stand-down for all electrical work at the Yucca Mountain site. The stand-down was related to safety and quality concerns and resulted in the project having to furlough 15 of the 19 electricians at the site. During this reporting period, the stand-down was being lifted gradually as new electricians completed an enhanced worker qualification program and began limited work activities.

Limited Access to Underground Areas

Through an employee concern, it was determined that an underground fire hazard analysis for the main tunnel of the Exploratory Studies Facility (ESF) did not address safety recommendations made 4 to 5 years ago during development of the analysis. After the concern was validated, measures were put in place to limit tunnel access for individuals and groups (for instance, on tours) that did not have General Underground Training (GUT). GUT covers what to do in certain emergency situations in the tunnel. Until the safety issues are resolved, tours to anyone without GUT are limited by the standing order from going further into the ESF than Alcove 2, a distance of about 168 meters (550 feet). As of this reporting period, compensatory measures are being considered that will resolve outstanding issues related to this standing order.

3.2 Scientific Investigations

The DOE continues to conduct scientific and engineering investigations, or tests, to understand Yucca Mountain's geology, chemistry, hydrology, and other physical aspects and processes that could affect a potential repository's safety, and to provide input to a potential repository's design. DOE can use the results of this work to help form a safety and licensing basis for a potential repository.

Most of DOE's currently active scientific and engineering investigations are being done through their contracts with the national laboratories and the U.S. Geological Survey. Table 2 is a list of these currently active or recently completed tests. Included in the list is the reference number of the plan for, and status of, each test at the end of the reporting period.

DOE also supports some scientific investigations through funding of Yucca Mountain Project oversight to Nye County, Nevada and Inyo County, California. Under this program, these counties conduct independent scientific investigation programs. These are described under Section 3.4 "Surface Based Field Testing" below.

In addition, the University and Community College System of Nevada (UCCSN) has a Cooperative Agreement with the DOE's Office of Repository Development to participate in scientific and engineering studies of the Yucca Mountain repository site. A listing of all current and closed UCCSN scientific investigations can be found at: http://hrcweb.lv-hrc.nevada.edu/qa/sip.htm.

DOE also contracts with Atomic Energy of Canada, Limited (AECL) for scientific

investigation of potential repository issues. AECL is currently working on three studies under the DOE QA program. They are: 1) radionuclide transport through tuff samples from Busted Butte; 2) crevice corrosion in titanium, Alloy 22, and stainless steel, and; 3) neutron diffraction based measurements of strain in Alloy 22 test specimens.

The status of selected Yucca Mountain Project (YMP) tests are described below.

3.3 Exploratory Studies Facility (ESF) Testing

The excavation of the ESF main drift, completed in 1997, allows the collection of scientific and engineering data at Yucca Mountain. DOE continues testing in the ESF main drift to supply data to support DOE's ongoing scientific studies. Figure 1 shows the ESF test locations. Ongoing ESF testing activities are summarized below.

Alcove 5 (Drift-Scale Test)

In accordance with the established DOE test plan, power to the heated drift was turned off in mid-January 2002, and the 4 year cool-down of the facility is being monitored. DOE is performing periodic visual and video inspection, water sampling, gas sampling, neutron logging, and electrical-resistance tomography. The data from this test have primarily been used as input to the Thermal Measurements Analysis Modeling Report (AMR).

Drilling on two additional chemistry boreholes in the access observation drift began during this reporting period, one of the boreholes was completed.

South Ramp

Site work for Phase I of a ground support test in the south ramp of the ESF began during this reporting period. This test is looking at issues related to the use of rock bolts in the drifts of the proposed repository. Eight rock bolts were installed and grouted. The non-heated rock bolts have been pull tested, the remaining rock bolts will be heated to 100°C before being pull tested.

3.4 Enhanced Characterization of the Repository Block (ECRB) Testing

The excavation of the ECRB cross drift, completed in October 1998, allows the collection of scientific and engineering data in stratigraphic units that constitute the bulk of the potential repository horizon. DOE continues ECRB testing to supply data to support DOE's ongoing scientific studies. Figure 1 describes the ECRB test locations. ECRB testing activities are summarized below.

Sealed Portion of the ECRB Cross-drift

In an ongoing effort to monitor moisture conditions in the sealed portions of the ECRB, the ECRB bulkheads from Station 22+01 and beyond were closed on November 14, 2001. The bulkhead at Station 17+63 was closed on December 20, 2001. Before the closure of those bulkheads, project personnel installed enhanced monitoring and collection equipment, including remote cameras and moisture-collection devices, in accordance with the revised test plan. Plastic sheets and drip cloths infused with a pH-sensitive chemical were installed near the crown of the tunnel, and numerous sample bottles were placed to collect possible drips from rock bolts.

DOE reopened the bulkhead at Station 17+63, on June 24, 2002. The main purpose for this entry was to take geotechnical rock property samples and to do a slot test in the lower lithophysal zone between Stations 17+63 and 22+01. The bulkhead at Station

17+63 will be resealed after completion of the sampling and other activities in the ECRB.

An unscheduled entry past the bulkhead at 22+01 was made in January 2003 in response to smoke detected behind the bulkhead (see OR report OR-03-01). Related to the smoke event, and in an effort to remove all heat sources behind the bulkhead, external power to the instrumentation located behind the bulkhead was turned off in February 2003. DOE plans an entry past the bulkhead at 22+01 at the end of June 2003 to replace the external power sources for the instrumentation with batteries.

3.5 Surface-Based Field Testing

Nye County EWDP

The Early Warning Drilling Program (EWDP) was initiated as part of the Nye County Nuclear Waste Repository Project Office Yucca Mountain Oversight program. The purpose of the EWDP is to establish a groundwater monitoring system to protect the residents of Nye County in Amargosa and Pahrump Valleys against potential radionuclide contamination.

The program is also intended to provide geologic and hydrologic information to DOE's Yucca Mountain program. The targeted area is located in the hydrogeologic system south of Yucca Mountain. The questions planned to be investigated are: 1) the origin of spring deposits; 2) the geology and hydraulic properties of valley-floor sediments; 3) the recharge; and 4) groundwater-flow patterns.

EWDP Phase IV Status

EWDP Phase IV began the week of October 20, 2002, with the abandonment of wells EWDP-5S and -2D. New wells EWDP-16P, EWDP-27P, and EWDP-28P were drilled and completed from October 2002 to January 2003. Drilling on two additional Phase IV wells is scheduled to begin in mid-June 2003. Detailed information on these wells (when available) and updates to the status of the Phase IV drilling project can be found at: http://www.nyecounty.com/ewdpmain.htm.

Alluvial Tracer Complex

The Alluvial Tracer Complex (ATC) is a joint Nye County and DOE Cooperative Testing Program to investigate flow and transport properties of the saturated alluvium, using wells drilled as part of the EWDP. Part of the ATC testing program was to include cross-hole tracer tests at well EWDP-19D/D1, in which tracers would have been introduced via observation wells. Well 19D1, which is located in the deepest zone in the saturated alluvium, was scheduled to be pumped, during those tests, to recover the tracers, through lateral flow from the observation wells. However, these tracer tests are currently on hold since the State Engineer has not renewed permit waivers for the cross-hole test tracers.

Inyo County Well Drilling

In early April 2003, Inyo County, California, begin drilling the first of five deep monitoring wells in the county, as part of its Yucca Mountain oversight program. The county's rationale for drilling these new wells is to: 1) evaluate regional groundwater flow through the southern Funeral Mountains; 2) establish structural controls on flow paths and discharge areas; and 3) evaluate potential zones of mixing between the deep regional groundwater systems and the local shallow groundwater systems to the northeast. During this reporting period the first of these new wells was drilled to a depth of 372

meters (1220 feet). This well is located south of Yucca Mountain, in Death Valley National Park. In addition to Inyo County sampling and logging, the well cuttings will be sampled by YMP and the United States Geological Survey will run a geophysical log.

Pena Blanca (Natural Analog Program)

Drilling commenced in mid-March 2003. During this reporting period two exploratory wells were drilled and cored, and work began on a third well. A total of four locations will be drilled and cored to just below the water table, and completed as test wells for water sampling.

3.6 Laboratory Studies

Laboratory Study of Radionuclide Transport in Non-Welded Tuff

During this reporting period post-migration radiometric analysis on the tuff blocks, and microbiological investigations into the cause of chemically reducing conditions in the saturated block continued at AECL Laboratories. Preliminary results indicate that chemically reducing microbial activity is possible even with filter-sterilized water and autoclaved tuff.

3.7 Upcoming New Tests and Studies

Alcove 10

Alcove 10 in the ECRB is a proposed thermal test on the repository horizon in the cross drift. Given current budget constraints, the project is discussing a path forward.

Atlas Facility

The FY 2003 thermal management dispersion testing at the Atlas facility is pending. DOE is drafting a test plan.

4.0 GENERAL ACTIVITIES

4.1 Meetings

NRC/DOE Quarterly Management and Quality Assurance Meetings

On, April 29-30, 2003, Office of Nuclear Material Safety and Safeguards (NMSS) staff, including the ORs, met with DOE staff to discuss QA and management issues concerning the DOE Yucca Mountain program. Both meetings were three-way video conferences hosted at ORD facilities in Las Vegas, Nevada, with connections to NRC Headquarters and the Center for Nuclear Waste Regulatory Analyses in San Antonio, Texas. Various stakeholders, including representatives from the State of Nevada, Clark County, Las Vegas Paiute Tribe, City of Las Vegas, and industry attended at NRC and DOE meeting locations. Also in attendance were staff from NRC Region IV and Office of General Council. Various stakeholders also participated via telecom. A summary of each meeting is available from NRC's ADAMS system. The accession number for the Management Meeting is ML031390625, the accession number for the Quality Assurance Meeting is ML031270582. The next quarterly NRC/DOE meetings are scheduled for July 15-16, 2003 in Rockville, Maryland.

DOE Monthly Operating Report Meetings

During this reporting period the ORs began attending DOE's newly established Monthly Operating Report (MOR) meetings. These are generally held at the end of each month.

The purpose of these meetings is to provide DOE ORD upper management with an evaluation of project issues related to management initiatives, QA, licensing, design, ES&H, site operations, institutional affairs, resources, and administration. The MOR utilizes conventional red, yellow and green indicators to identify status of these issues. The ORs' find these meetings very beneficial to the NRC's interest in determining project status during the pre-license application consultation period.

DOE/BSC Rolling Quality Focus Meetings

In response to issues identified in Stop Work Order BSC(O)-03-C-097 and CAR BSC(O)-03-C-097, concerning a programmatic break-down in the procedure transition process, DOE and BSC senior management developed project "Rolling Quality Focus" meetings. The ORs were invited to and did attend the two meetings held during the reporting period. These meetings involve all of the management personnel from DOE, BSC, and the labs. The principal speakers at these meetings are top management from both DOE and BSC. The meetings focused on the need for strict procedural compliance, defining the consequences associated with noncompliance, and the need to establishing line ownership of the quality processes. Additional topics that were discussed included accountability, development of a strong safety culture, timely identification and resolution of deficiencies, and the establishment of an environment where identification of areas for improvement are valued. DOE and BSC management commitments to effectively monitor procedural compliance, simplify procedural controls, and to uphold a philosophy of quality over schedule were reinforced. In order to ensure successful performance, project management also committed to develop metrics that will provide feedback regarding performance. Site management personnel will be provided with information packets to convey the new expectations to all project personnel. Follow-on meetings are planned to provide senior DOE and BSC managers with feedback from employees and to maintain project direction. The ORs found attendance at these meeting very helpful in trying to evaluate DOE's process for addressing procedural compliance issues on the project.

4.2 Site Visits

On April 3, 2003, an OR conducted a site visit for 5 members of the NRC's Inspector General's office. The site visit included access to the exploratory study's facility (main tunnel) with a stop that included the drift-scale thermal test. The group also visited the south portal of the main tunnel (where the tunnel boring machine is parked), the crest of Yucca Mountain, and the DOE's low-level waste disposal site in Area 5 of the Nevada Test Site. The IG staff found the site visit beneficial to their understanding of the activities related to the YMP. There were no outstanding issues raised as a result of this visit.

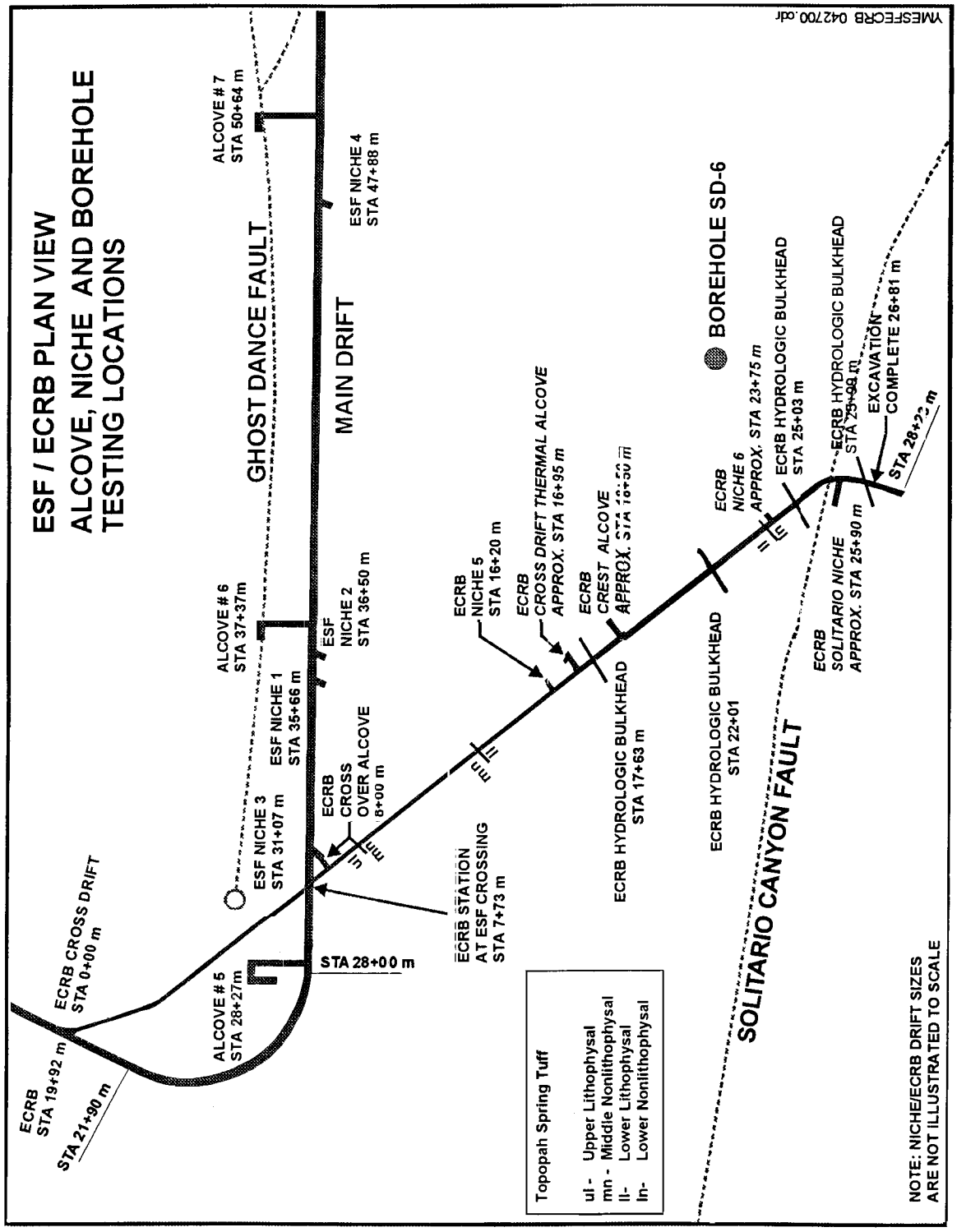
ESF / ECRB PLAN VIEW
ALCOVE, NICHE AND BOREHOLE
TESTING LOCATIONS
GHOST DANCE FAULT
MAIN DRIFT
ECRB CROSS DRIFT STA 0+00 m
ECRB STA 19+92 m
STA 21+90 m
ALCOVE # 5 STA 28+27m
STA 28+00 m
ALCOVE # 6 STA 37+37m
ESF NICHE 3 STA 31+07 m
ESF NICHE 1 STA 35+66 m
ESF NICHE 2 STA 36+50 m
ECRB CROSS OVER ALCOVE 8+00 m
ALCOVE # 7 STA 50+64 m
ESF NICHE 4 STA 47+88 m
ECRB STATION AT ESF CROSSING STA 7+73 m
ECRB NICHE 5 STA 16+20 m
ECRB CROSS DRIFT THERMAL ALCOVE APPROX. STA 16+95 m
ECRB CREST ALCOVE APPROX. STA 16+50 m
ECRB HYDROLOGIC BULKHEAD STA 17+63 m
ECRB HYDROLOGIC BULKHEAD STA 22+01
BOREHOLE SD-6
ECRB NICHE 6 APPROX. STA 23+75 m
ECRB HYDROLOGIC BULKHEAD STA 25+03 m
ECRB HYDROLOGIC BULKHEAD STA 25+90 m
ECRB SOLITARIO NICHE APPROX. STA 25+90 m
EXCAVATION COMPLETE 26+81 m
STA 28+00 m
SOLITARIO CANYON FAULT
Topopah Spring Tuff
ul - Upper Lithophysal
mn - Middle Nonlithophysal
ll- Lower Lithophysal
ln- Lower Nonlithophysal
NOTE: NICHE/ECRB DRIFT SIZES ARE NOT ILLUSTRATED TO SCALE
YMESFECRB 042700.cdr

Figure 1

U.S. NRC On-Site Licensing Representatives' Tracking Report for Open items Followed in Bi-Monthly OR Report

TABLE 1

(For NRC tracking only) AOI-YMSCO-ARC-02-12-01	Identifies the need for DOE OQA to ensure that procedure development and review process includes a documented evaluation to verify compliance with the requirements of the projects QARD	OR Report No. OR-03-01	Date Item Closed:
OR Open Item 03-03	An evaluation in DOE's progress in implementing corrective actions associated with CAR BSC-01-C-001, concerning model validation -the OR reviewed TWPs (approx. 43 models). Based on the results, it could not be established if the evaluation criteria will result in the development of models with adequate confidence for LA.	OR Report No. OR-03-02	Date Item Closed:
OR Open Item 03-02	During a review of the MII confirmation packages, it was identified that the action statement execution task descriptions and completion schedules for many of the reviewed pkgs., had been modified without appropriate justification. Therefore, pending the resolution of this apparent deviation from a commitment to administer the MII in accordance with the requirements of AP-5.1Q, this issue is identified as this OR Open Item.	OR Report No. OR-03-02	Date Item Closed:
OR Open Item 03-01	This Open Item is based on issues on separate DRs: 1) the effective resolution of concerns related to inadequate personnel training; 2) the failure to establish an effective transition plan; and 3) the evaluation of the SCWE issues.	OR Report No.: OR-03-01	Date Item Closed:
OR Open Item 02-13	The current status of corrective & preventive actions associated w/CAR #BSC-02-C-01 revealed that not all corrective actions stated had been complete.	OR Report No: OR-02-05	Date Item Closed:
OR Open Item 02-12	Contrary to requirements of the QARD Supplement III 2.4.Cprocedure AP-SIII.2Q inappropriately allows for the use of unqualified data - BSCQA procedure change control program failed to identify this issue.	OR Report No: OR-02-05	Date Item Closed:
OR Open Item 02-11	Based on surveillance not identifying specific problems w/Soft-ware functionality for codes tested, 7 including NUFT did not pass ITP and/or VTP surveillance.	OR Report No: OR-02-05	Date Item Closed:
OR Open Item 02-10	Pending appropriate evaluation & documentation of the design control attributes associated with requirements of 10CFR §63.44 and Part 21	OR Report No: OR-02-04	Date Item Closed:

U.S. NRC On-Site Licensing Representatives' Tracking Report for Open items Followed in Bi-Monthly OR Report

TABLE 1

OR Open Item 02-09	Pending revision of engineering procedures, to include appropriate design verification considerations.	OR Report No: OR-02-04	Date Item Closed:
OR Open Item 02-08	The required performance of annual audits' justification for delaying a scheduled audit of YMSCO for 3-months with an additional extension does not appear to be adequately supported. - Deviation from requirement of Sub-section 18.2.1 E of the QARD.	OR Report No: OR-02-04	Date Item Closed: **OR Report No.: OR-02-06 January 23, 2003**
OR Open Item 02-07	Model Validation Impact Assessment - addressed the effect of inappropriately validated models on TSPA-SR. Many cases of impact assessments used TSPA-SR results to evaluate the local impacts. It's unclear how this practice evaluated the cumulative impact of all the models in question.	OR Report No: OR-02-01	Date Item Closed:
OR Open Item 02-06	Unqualified Data Impact Assessment - NRC staff identified unqualified data that could be replaced with qualified data for the performance assessment. For risk-significant components, an evaluation of unqualified data that is replaced with qualified data would help determine if efforts should be under-taken to qualify the removed data.	OR Report No: OR-02-01	Date Item Closed:
OR Open Item 02-05	Provisions are in place that allow for model validation to continue past issuance of the documentation. The models used in the performance assessment should have adequate support for their representation at the time the performance assessment documentation is issued.	OR Report No: OR-02-01	Date Item Closed:
OR Open Item 02-04	Number of criteria have been developed related to various forms of review. If a review is relied upon for model validation, it should be directed at validating the model and it should encompass the full body of information to the extent practical.	OR Report No: OR-02-01	Date Item Closed: **OR Report No.: OR-03-01 April 14, 2003**

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TABLE 1

OR Open Item 02-03	More objective criteria (comparison to data not used in the development of the model) typically results in higher confidence in model validation are not distinguished from the more subjective, problematic criteria.	OR Report No: OR-02-01	Date Item Closed:
OR Open Item 02-02	Current process controls specify that one or more of 9-criteria may be utilized to validate a model. All of the criteria should in-crease confidence in the modeling process, some criteria do not appear to be appropriate for addressing whether the model is valid for its intended use.	OR Report No: OR-02-01	Date Item Closed: **OR Report No.: OR-03-01** **April 14, 2003**
OR Open Item 02-01	Failure to properly include the specific issues identified in the Concerns Program Final Report in the resolution process may result in not adequately addressing the original employees concern.	OR Report No: OR-02-01	Date Item Closed: **OR Report No.: OR-02-06** **January 23, 2003**

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CURRENT TEST ACTIVITIES BY SCIENTIFIC INVESTIGATION TEST PLAN

Table 2

Test Plan Title	Test Plan Identifier	Test Plan Status
Ash Redistribution Studies and Field Studies of Lava Morphology & Igneous Processes	SITP-02-DE-001	Test ongoing
Atlas Ventilation Test - Phase 3	SITP-02-EBS-001	Test complete, decontrolled
Atlas Natural Convection Test	SITP-02-EBS-002	Field testing complete, reports in process
Field Thermal Conductivity Testing	SITP-02-EBS-003	Test ongoing
Reactive Transport Column Experiments	SITP-02-EBS-004	Laboratory tests complete, report in process
Atlas Breached Waste Package and Drip Shield Experiments	SITP-02-EBS-005	Testing complete, report at Rev 00c
Laboratory Thermal Conductivity Testing	SITP-02-EBS-006	Testing complete, report at Rev 00b
TSW Fracture and Lithophysal Studies	SITP-02-ISM-001	Test ongoing
Geologic Mapping of Southern Expansion and Jet Ridge	SITP-02-ISM-002	Complete in 2003
Natural Analogs	SITP-02-NA-001	Test ongoing
Rock Modules Testing	SITP-02-SSD-001	Test complete, report being prepared for Rev 00a
Mechanical Properties Laboratory Investigations	SITP-02-SSD-002	Test ongoing
Ground Support Testing	SITP-02-SSD-003	Test ongoing, field testing shortened due to budget constraints
Lithostratigraphic Studies in Cooperation with Nye County Co. EWDP	SITP-02-SZ-001	Test ongoing
Hydrologic/Hydrochemistry Studies in Cooperation with Nye Co. EWDP	SITP-02-SZ-002	Test ongoing
Alluvial Testing Complex- Single-well, Multi-well, and Laboratory Studies	SITP-02-SZ-003	Test deferred
Inyo County Borehole sampling	Draft	Ongoing
Laboratory Sorption Measurements- SZ	SITP-02-SZ-004	Test Report due 2003
Moisture Monitoring in the ECRB Bulkhead Cross Drift	SITP-02-UZ-001	Test ongoing
Niche 5 Seepage Testing	SITP-02-UZ-002	Testing complete, SITP to be decontrolled
Alcove 8 Flow & Seepage Testing	SITP-02-UZ-003	Test ongoing
Systematic Hydrologic Characterization	SITP-02-UZ-004	Test ongoing thru 2003
36Cl Validation	SITP-02-UZ-005	Field testing complete report ongoing

Test Plan Title	Test Plan Identifier	Test Plan Status
Busted Butte Transport Testing	SITP-02-UZ-006	Testing complete, SITP to be decontrolled
UZ Hydrochemistry Investigation	SITP-02-UZ-007	Test still active but may deferred to 2004/2005
Fluid Inclusion Studies	SITP-02-UZ-009	Test still active but may deferred to 2004/ 2005
Moisture Monitoring Investigation and Alcove 7 Studies	SITP-02-UZ-010	Test ongoing
Laboratory Sorption Investigation- UZ and SZ	SITP-02-UZ-011	Test still active but deferred
Drift Scale Test	SITP-02-UZ-012	Test ongoing
Laboratory Flow/Coupled Process Block Experiments	SITP-02-UZ-013 (draft)	New SITP in draft
Cross Drift Thermal Test	SITP-02-UZ-014	Test canceled SITP to be decontrolled
Niche 4 Seepage Testing	SITP-02-UZ-015	Test complete, SITP to be decontrolled
Commercial Spent Fuel and Fuel Rod Segment Degradation and Radionuclide Release in Long Term Tests	SITP-02-WF-001	Test ongoing
DHLW Degradation and Radionuclide Release in Long-Term Tests	SITP-02-WF-002	Test ongoing
Waste Form Colloids Characterization and Concentration Studies	SITP-02-WF-003	Test ongoing
Validation of Dissolved Radionuclide Concentration	SITP-02-WF-004	Test ongoing
CSNF Oxidation Testing	SITP-02-WF-006	Test ongoing
CSNF Flow-Through Dissolution Testing	SITP-02-WF-007	Test ongoing
CSNF Colloid Release Testing	SITP-02-WF-008	Test ongoing
PNNL Dissolved Concentration Validation Testing	SITP-02-WF-009	Test ongoing
Waste Package and Drip Shield Materials Testing	SITP-02-WP-001	Test ongoing
Waste Package Environment Investigations – Dust Geochemistry	SITP-02-WP-008	Test ongoing
Microclimate Records in Fracture Minerals	SITP-03-UZ-016	Deferred